

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

COMMONWEALTH EDISON COMPANY,)
)
Approval of the Energy Efficiency and)
Demand-Response Plan Pursuant to Section 12-103(f) of)
the Public Utilities Act)

Docket No. 07-0540

Corrected Direct Testimony of

JAMES C. EBER

Manager, Demand Response and Dynamic Pricing
Commonwealth Edison Company

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1 **I. Introduction and Purpose**

2 **A. Identification of Witness**

3 Q. Please state your name and business address.

4 A. James C. Eber, Commonwealth Edison Company ("ComEd"), Three Lincoln Centre,
5 Oakbrook Terrace, Illinois 60181.

6 Q. By whom are you employed and in what capacity?

7 A. I am employed by ComEd as a Manager, Demand Response and Dynamic Pricing.

8 **B. Purposes of Testimony**

9 Q. What are the purposes of your direct testimony?

10 A. The purposes of my direct testimony are to:

11 (1) Describe the statutory requirements for demand response programs under Section
12 12-103(c) of the Public Utilities Act ("Act").

13 (2) Describe ComEd's current portfolio of demand response programs.

14 (3) Demonstrate that ComEd's proposed expansion of the Nature First program for
15 residential customers is designed to achieve the statutory goals of a reduction in
16 peak demand by 0.1% over the prior year for eligible retail customers during the
17 three years of ComEd's energy efficiency and demand response plan.

18 (4) Estimate the total annual costs of expanding Nature First to eligible retail
19 customers in order to meet the statutory demand response goals.

20 **C. Summary of Conclusions**

21 Q. Please summarize the conclusions of your direct testimony.

22 A. ComEd is a nationally-recognized leader in the area of demand response, and has a
23 variety of demand response programs already in place. In the next three years, ComEd
24 plans to meet its statutory requirements under Section 12-103(c) of the Act through an
25 expansion of the Nature First residential air conditioning ("AC") cycling program. The
26 incremental costs associated with the expansion of the Nature First program are just and
27 reasonable and should be recovered through ComEd's proposed cost-recovery
28 mechanism, Rider EDA – Energy Efficiency and Demand Response Adjustment.

29 **D. Identification of Exhibits**

30 Q. What attachments are attached to and incorporated in your direct testimony?

31 A. I have attached the following exhibit to my testimony:

32 Exhibit 3.1: Economic Analysis of ComEd's Nature First Expansion for Eligible
33 Customers.

34 **E. Background and Experience**

35 Q. Mr. Eber, please summarize your duties and responsibilities in your current position.

36 A. As a Manager of Demand Response and Dynamic Pricing, I am responsible for managing
37 ComEd's portfolio of demand response products. I was responsible for the design of
38 ComEd's Voluntary Load Reduction program, which has since become one of the largest
39 programs of its type in the nation. I have supervised the launch of several new demand
40 response products, managed four distinct load management notification and control
41 systems, and have been responsible for the participation of over 4,500 business customer
42 sites and 56,000 residential customers' homes. I was responsible for the integration of
43 the ComEd portfolio of demand response resources into the PJM Interconnection, L.L.C.
44 ("PJM") market, and I represent ComEd at the PJM Demand Side Response Working

Group, which is responsible for the continuous improvement of the PJM market framework for demand response. In addition, I have been on the Executive Counsel of the Peak Load Management Alliance, the nationally prominent trade association for demand response, for four years, and was in charge of the PECO demand response portfolio for three years, doubling the amount of resources within that portfolio.

Q. Mr. Eber, please summarize your educational background and professional experience.

A. I graduated from Bradley University with a Bachelor of Science in Mechanical Engineering. I have been employed by ComEd since 1988. My professional experience includes nineteen years of experience in the design, operation and management of customer-related utility programs. I have been engaged fully in demand response products since 1997, and I have been managing the ComEd portfolio of demand response products since 1999.

II. Statutory Demand Response Requirements

Q. Please describe the demand response goals applicable to ComEd.

A. The new Section 12-103(c) of the Act requires electric utilities to implement "cost-effective demand response measures to reduce peak demand by 0.1% over the prior year for eligible retail customers." 220 ILCS 5/12-103(c). Although this requirement "commences June 1, 2008 and continues for 10 years," the scope of ComEd's 2008-2010 Energy Efficiency and Demand Response Plan ("Plan"), filed today with the Illinois Commerce Commission ("Commission" or "ICC"), is limited to the first three years.

Q. What is ComEd's interpretation of the timetable for implementation of demand response programs in Section 12-103(c)?

67 A. Following approval of the Plan, ComEd will begin implementing cost-effective demand
68 response measures that will increase its capacity to reduce peak demand. ComEd is
69 required to implement measures after Plan approval and prior to May 31, 2009 that equal
70 0.1% of the peak load reached for eligible customers during the period of peak demand
71 (i.e., the summer) in 2008. These demand response measures will be in place by May 31,
72 2009 so they can be dispatched if needed during the period of peak demand in 2009.
73 Similarly, ComEd must implement measures between June 1, 2009 and May 31, 2010
74 and between June 1, 2010 and May 31, 2011 that equal 0.1% of the peak load reached for
75 eligible customers during the periods of peak demand in 2009 and 2010, respectively.

76 **III. ComEd's Existing Demand Response Programs**

77 Q. What is a demand response program?

78 A. A demand response program (also known as a "load response" program) is a program in
79 which a utility encourages its customers to limit their use of energy resources during
80 times of peak demands. Demand response programs vary significantly, but they all share
81 the common characteristic of reducing or shifting peak demand.

82 Q. Please describe ComEd's current approach to demand response programs.

83 A. ComEd is an innovative and nationally-recognized leader in the development and
84 management of demand response resources to actively manage peak demands. ComEd
85 first began developing demand response programs over two decades ago. Today, ComEd
86 maintains a large portfolio of demand response resources through its "Smart Returns"
87 program, including programs targeting both residential and commercial and industrial
88 ("C&I") consumers. Each program provides customers with financial rewards that vary
89 by program and by customers' unique characteristics and abilities to reduce energy usage.

90 Q. Why does ComEd engage in demand response programs?

91 A. ComEd's demand response programs help to maintain the integrity of the transmission
92 and distribution system. During periods of high temperatures and high electricity usage,
93 demand response programs also help to mitigate increased spot market prices by reducing
94 overall electricity demand. These programs also allow the wholesale energy market to
95 operate more efficiently. Finally, demand response programs help reduce the amount of
96 greenhouse gases emitted during times of peak electric generation.

97 Q. What are the different types of programs in ComEd's current demand response portfolio?

98 A. ComEd's demand response programs generally fall into several categories, including (1)
99 Direct Load Control ("DLC"); (2) Voluntary Load Reduction ("VLR"); (3) Capacity-
100 Based Load Response ("CLR"); and (4) real-time pricing programs. ComEd's DLC
101 program, Nature First, is intended for residential customers, while its VLR and CLR
102 programs are targeted at C&I customers. Both residential and C&I customers can take
103 advantage of ComEd's real-time pricing options.

104 Q. Could you please describe these demand response programs in more detail?

105 A. As discussed below, Nature First is ComEd's AC cycling program. The VLR program is
106 a strictly voluntary program that offers non-residential customers financial rewards for
107 reducing electricity use during peak energy periods. The VLR program is more fully
108 described in the current tariff filed for Rider VLR7 – Voluntary Load Response and
109 System Reliability Program 2007. Under the CLR program, non-residential customers
110 reduce load to a pre-determined level, with compensation based on capacity market
111 values from PJM's capacity markets. The CLR program is more fully described in the
112 current tariff filed for Rider CLR7 – Capacity-Based Load Response and System

113 Reliability Program 2007. ComEd also has real-time hourly pricing options in place for
114 customers who want to make more precise electricity usage decisions based on day-to-
115 day market pricing changes. These are available for both business customers, through
116 Rate BES-H – Basic Energy Service-Hourly Energy Pricing, and residential customers.
117 ComEd’s Residential Real-Time Pricing Program (“RRTP”), which recently was
118 expanded, is the largest residential program of its type nationally, and is more fully
119 described in the current tariff filed for Rider RRTP – Residential Real-Time Pricing
120 Program.

121 Q. How often are ComEd’s demand response measures dispatched, or called, in order to
122 reduce energy use during times of peak demand?

123 A. By definition, demand response resources reduce or shift peak demand, and are typically
124 dispatched based on a variety of factors. Demand response measures need to be in place
125 every year so they are available to be dispatched if needed during the following summer
126 (*i.e.*, the period of peak demand). If in a given summer the demand response resource is
127 not needed to be dispatched for either system reliability or economic reasons, the
128 resource will not be dispatched. Factors such as peak weather conditions, generator
129 availability, transmission performance, and energy wholesale prices could all enter into
130 the decision as to whether resources should or should not be called.

131 IV. **ComEd’s Compliance With Statutory Demand Response Requirements**

132 A. **Expansion of Nature First Program**

133 Q. How does ComEd anticipate meeting the demand response program requirements of
134 Section 12-103(c) in its initial three-year Plan?

135 A. ComEd proposes to meet its demand response goals during the years 2008-2010 through
136 an expansion of its current Nature First program. Like ComEd's other demand response
137 programs, the Nature First program both benefits the environment, by reducing fossil fuel
138 emissions, and enhances ComEd's system reliability, by reducing customer load during
139 the highest demand time periods.

140 Q. Please describe ComEd's Nature First program.

141 A. ComEd's Nature First program has allowed residential customers to enjoy the benefits of
142 participation in demand response since the mid-1990s. Nature First is an AC cycling
143 program offered to residential customers who own their home and have central AC. The
144 program provides participating customers with an annual credit in exchange for
145 permitting ComEd to install a switch on their home near the AC unit. The switch is
146 radio-controlled, and allows ComEd to cycle the customer's AC compressor on and off
147 during times of peak energy use, during the summer months. Nature First currently has
148 nearly 57,000 participants and a load reduction potential of 89 megawatts ("MW"). The
149 Nature First program is more fully described in the current tariff filed for Rider AC7 –
150 Residential Air Conditioner Load Cycling Program 2007.

151 Q. What incentives does ComEd provide to customers to participate in the Nature First
152 program?

153 A. Customers receive a credit of up to \$40 a year in return for participating in the Nature
154 First program, depending on their level of participation. A customer signing up for the
155 "50% option," under which ComEd can cycle off the AC unit weekdays from 12:00 to
156 8:00 p.m. for a maximum of 15 minutes every half-hour for no more than a six-hour
157 period, receives a \$5 per month bill credit from June-September, or a total credit of \$20.

A customer choosing the “100% option,” under which ComEd can cycle off the AC unit any weekday from 12:00 to 8:00 p.m. for a maximum of one continuous three-hour period, receives a \$10 per month bill credit from June-September, or a total credit of \$40. There is no cost to customers to enroll in the program, as ComEd pays to purchase, install and maintain the Nature First switch.

Q. How does ComEd intend to use the Nature First program to achieve the statutory peak demand reduction goals?

A. ComEd plans to expand the Nature First program to the level required to meet the statutory goals by increasing promotion of the program and outreach to customers. As we have done in the past, ComEd will continue to use demographic information to send direct mailings that specifically target those customers likely to have the correct home configuration for the program.

Q. In your opinion, is the Nature First program designed to achieve the statutory demand response goals in Section 12-103(c)?

A. Yes. The estimated number of new participants in the Nature First program required to meet ComEd’s statutory requirements is attached in ComEd Exhibit 3.1, and an abridged version is set forth below as Table 1:

Table 1: Expansion of Nature First Program To Meet Statutory Goals

Year	Annual Goal (MW)	Annual Number of New Participants Needed	Annual Number of New Switches Needed
2008	11.7	8,092	8,674
2009	11.1	7,695	8,249
2010	10.0	6,896	7,392

176 As noted above, the Nature First Program has been in place for over ten years,
177 and ComEd has a great deal of experience with the program. Using 2008 as an example,
178 ComEd estimates that the total eligible peak metered load is 11,702 MW. ComEd's
179 demand response goal, which is the product of this number and the statutorily-prescribed
180 multiple of 0.1%, is therefore 11.7 MW. Based on data that ComEd has compiled
181 historically for PJM, including the proportion of participants who select the 50% and
182 100% options, ComEd anticipates that each participant in the program will reduce peak
183 load at the meter by 1.446 kilowatts ("kW"), and that each participant owns an average of
184 1.072 switches, which accounts for the facts that some customers have more than one AC
185 unit. As such, to reach the required level of load reduction in 2008, ComEd will need to
186 add 8,092 new participants and 8,674 new switches. These numbers, as well as those for
187 the remaining years in the plan, are included in ComEd Exhibit 3.1.

188 Because of its highly scalable infrastructure, the Nature First program easily will
189 allow for the addition of those incremental participants needed to achieve the statutory
190 peak demand reduction goals. ComEd believes that the level of participation shown is
191 well within reasonable penetration levels for this program to achieve.

192 Q. How often is the Nature First program dispatched?

193 A. Since the Nature First Program started in 1996, the switches have been cycled to curtail
194 the use of energy during periods of peak demand a total of fifteen times. This is an
195 average of 1.25 calls per year. The program has been called during six of the twelve
196 years in which it has operated. During the summer of 2007, the program was not called,
197 but the switches were cycled three days during the summer of 2006 for six hours on each
198 of the days.

199 Q. Should the fact that Nature First is not dispatched every year affect whether ComEd uses
200 the program to meet its statutory goals of a 0.1% reduction in peak demand per year?

201 A. No. Calling the program unnecessarily during the summer would drive up the marginal
202 costs of the program. It is likely that increasing the number of times the Nature First
203 Program participants are called during a summer would decrease customers' willingness
204 to participate in the program for the amount of incentive currently provided and increase
205 the churn rate of program participants. However, even if the Nature First program is not
206 dispatched during a particular year of the Plan, that will not affect ComEd's ability to
207 meet the peak demand goals described in Section 12-103(c) of the Act. Rather, the key to
208 meeting the statutory requirement is ensuring that ComEd has acquired a capacity of peak
209 load reduction equal to that designated in the statute that can be dispatched should it
210 become necessary.

211 Q. Are ComEd's demand response measures targeted towards a diverse range of customers?

212 A. Yes. As described above, ComEd has a number of demand response measures in place
213 for residential and C&I customers. However, the language of Section 12-103(c) refers to
214 peak demand being reduced for "eligible retail customers," as defined in Section 16-
215 111.5 of the Act. Due to competitive declarations for medium and large classes of
216 customers in subsections (f) and (g) of Section 16-113 of the Act, the class of "eligible
217 retail customers" (those receiving fixed-price, bundled service from ComEd) is limited to
218 residential and some small C&I customers with under 100 kW of electricity usage. It is
219 appropriate, then, for ComEd to use the Nature First program to meet its demand
220 response requirements, particularly because its proposed portfolio of energy efficiency
221 programs targets all classes of customers. Further, although ComEd will be relying

exclusively on expansions to the Nature First program in its initial three-year Plan, it also will be evaluating other demand response measures during those first three years to determine their viability. Measures being evaluated will include those intended for both residential and small C&I customers with under 100 kW in usage who are within the definition of "eligible retail customers".

B. Annual Costs of Expanding Nature First Program

Q. How has ComEd determined which costs for Nature First will be collected through its proposed cost-recovery mechanism, Rider EDA, and which costs will continue to be collected under the current rate making process?

A. As stated above, only the incremental costs from the Nature First expansion to eligible customers will be included under proposed Rider EDA (ComEd Ex. 1.0, Appendix F). The Nature First costs to be recovered through Rider EDA for the eligible group of customers after the date that the Commission approves ComEd's plan would include both: (1) incremental capital investment to purchase and install Nature First switches and (2) incremental operations and maintenance ("O&M") costs, which include promotional costs, costs related to annual switch maintenance and repair, and annual information technology costs. Nature First costs still covered under the current rate-making process would include all costs for switches installed before the Commission approves ComEd's Plan, costs to operate and maintain services for the existing base of Nature First customers (nearly 57,000 participants), and costs for all residential customers outside of the eligible group (specifically for the RRTP customers).

Q. Has ComEd estimated the annual revenue requirement for expanding the Nature First program during the three years of its Plan?

245 A. Yes. The estimated annual revenue requirement of expanding the program for the next
246 three years is provided in ComEd Exhibit 3.1. The total annual revenue requirement of
247 expanding Nature First to eligible retail customers is estimated to be \$791,577 for the
248 twelve months ending May 31, 2009, \$992,315 for the twelve months ending May 31,
249 2010, and \$1,180,787 for the twelve months ending May 31, 2011. The estimated total
250 annual revenue requirement is determined by adding together the estimated annual
251 revenue requirement for incremental capital investment and the estimated annual revenue
252 requirement for incremental O&M costs, as well as a customer incentive to participate in
253 the program, and subtracting an incremental capacity credit that ComEd receives from
254 PJM for operating the program. Again, ComEd will seek to recover through Rider EDA
255 the estimated annual revenue requirement for only the incremental costs of expanding the
256 Nature First program.

257 Q. Did ComEd estimate the annual revenue requirement associated with the incremental
258 capital investment for expanding the Nature First program?

259 A. Yes. Having already determined the annual number of new Nature First switches needed
260 to comply with the requirements of 12-103(c) (*see* ComEd Ex. 3.1), we multiplied that
261 number by the cost of purchasing (\$80/switch) and installing (\$65/switch) each switch to
262 determine the total amount of incremental capital investment associated with the
263 switches. We then used this figure to estimate the annual revenue requirement for
264 incremental capital investment. The specific calculations undertaken to estimate the
265 annual revenue requirement for incremental capital investment are described in the direct
266 testimony of Martin G. Fruehe and the attached exhibit (ComEd Exs. 4.0 and 4.1). As
267 shown in those exhibits, the annual revenue requirement associated with incremental

268 capital investment is estimated to be \$82,481 for the twelve months ending May 31,
269 2009, \$240,270 for the twelve months ending May 31, 2010, and \$379,692 for the twelve
270 months ending May 31, 2011.

271 Q. Did ComEd estimate the annual revenue requirement for incremental O&M costs related
272 to expanding the Nature First program?

273 A. Yes. Here, we multiplied the annual number of new Nature First participants by the one-
274 time promotional O&M cost to acquire a new customer of \$80 per participant. We
275 determined this figure based on ComEd's past experience with the Nature First Program.
276 In addition, there is a ongoing annual O&M cost of \$12 per participant that occurs each
277 year, which includes \$10 for switch maintenance and repair and \$2 for incremental IT
278 support of the program. As shown in ComEd Exhibit 3.1, the annual revenue
279 requirement for incremental O&M costs is estimated to be \$744,434 in the twelve months
280 ending May 31, 2009, \$822,721 in the twelve months ending May 31, 2010, and
281 \$858,269 in the twelve months ending May 31, 2011.

282 Q. Does this conclude your direct testimony?

283 A. Yes.

Economic Analysis of ComEd's Nature First Expansion for Eligible Customers

Plan Year	Total Eligible Peak Load at Meter (MW)	Demand Response Goal (% of Peak)	Annual Goal (MW)	Cumulative Goal (MW)	Annual Number of New Participants Needed (1,445 kW/participant)	Cumulative Number of New Participants Needed	Annual Number of New Switches Needed *
2008	11,702	0.1	11.7	11.7	8,092	8,092	8,874
2009	11,128	0.1	11.1	22.8	7,895	15,986	8,249
2010	9,873	0.1	10.0	32.8	6,896	22,882	7,392

* Some participants have more than one switch (1,072 switch multiplier per participant)

Incremental Annual Capital plus O&M Costs:

Plan Year	Annual Goal (MW)	Annual Number of New Nature First Switches Needed	Annual Capital Cost to Purchase Switch (\$80 per Switch)	Annual Capital Cost to Install Switches (\$68 per Switch)	Annual Capital Budget Costs	Annual Number of New Nature First Participants Needed	One Time O&M Promotional Cost **	Annual Ongoing O&M Cost for IT and Switch Maintenance & Repair ***	Total Annual O&M Cost
2008	11.7	8,874	\$693,942	\$593,828	\$1,287,770	8,092	\$847,834	\$97,100	\$744,434
2009	11.1	8,249	\$659,908	\$536,175	\$1,196,083	7,895	\$830,975	\$191,748	\$922,721
2010	10.0	7,392	\$591,377	\$460,194	\$1,071,870	6,896	\$570,585	\$278,884	\$858,269

** O&M Cost on a per participant basis includes a one time \$80 promotional expense associated at 2.5% for initiation.

*** O&M Cost on a per participant basis includes an ongoing \$12 annual expense for incremental IT (\$2) and switch maintenance & repair (\$10); Expense is escalated at 2.5% for inflation

Total Net Revenue Requirement:

Plan Year	Incremental Participant Incentive Cost (66.1% @ \$40 & 40.8% @ \$20 per Participant) (\$)	Projected Incremental PJM Credit (C)	Total Annual O&M Cost (B)
2008	\$128,739	\$164,077	\$744,434
2009	\$257,477	\$328,154	\$922,721
2010	\$502,326	\$659,500	\$858,269